WHAT IS CLAIMED IS:

1. A method for determining the shape of a three-dimensional object, the method comprising:

illuminating at least a portion of a surface of the object with electromagnetic radiation comprising a plurality of first bands of differentiated characteristics to form a first bands projection;

detecting the first bands projection including the first bands of differentiated characteristics;

illuminating at least a portion of the surface of the object with electromagnetic radiation comprising a plurality of second bands of differentiated characteristics to form a second bands projection, the second bands having a different orientation than the first bands;

detecting the second bands projection including the second bands of differentiated characteristics; and

determining the shape of the object from the detected first bands projection and the detected second bands projection.

2. The method of claim 1, wherein the differentiated characteristics of the first bands comprise differentiated wavelengths, and the differentiated characteristics of the second bands comprise differentiated wavelengths.

3. The method according to claim 1, wherein each of the plurality of first bands has a uniform appearance throughout each band.

4. The method according to claim 1, wherein each of the plurality of first bands are located immediately adjacent one another.

5. The method according to claim 1, wherein each of the plurality of first bands are generally parallel to one another.

6. The method according to claim 1, wherein each of the plurality of first bands are curved.

7. The method according to claim 1, wherein the plurality of first bands comprise concentric circles.

8. The method according to claim 1, wherein each of the plurality of second bands has a uniform appearance throughout each band.

9. The method according to claim 1, wherein each of the plurality of second bands are generally parallel to one another.

10. The method according to claim 1, wherein each of the plurality of second bands are located immediately adjacent one another.

11. The method according to claim 1, wherein the orientation of the plurality of first bands is about perpendicular to the orientation of the plurality of second bands.

12. The method according to claim 1, wherein one of the plurality of first bands and plurality of second bands are oriented in a substantially vertical direction and the other of the plurality of first bands and plurality of second bands are oriented in a substantially horizontal direction.

13. The method according to claim 1, wherein the number of first bands equals the number of second bands.

14. The method according to claim 1, wherein the plurality of first bands comprises at least four first bands.

15. The method according to claim 1, wherein the plurality of first bands comprises from 6 to 12 first bands.

16. The method according to claim 1, wherein each of the plurality of first bands comprise a different color of light.

17. The method according to claim 1, wherein each of the plurality of second bands comprise a different color of light.

18. The method according to claim 1, wherein detecting the first bands projection and detecting the second bands projection is accomplished by a camera, and the camera is movable to different positions in relation to the object.

19. The method according to claim 1, wherein a plurality of cameras detect the first bands projection and the second bands projection.

20. The method according to claim 1, further comprising the step of assigning a color-numeric identifier to each of the plurality of first bands and the plurality of second bands.

21. The method according to claim 20, wherein each of the color-numeric identifier is a unique number.

22. The method according to claim 20, further comprising the step of calculating a series of overall final region values, wherein each overall final region value is determined by a function of the color-numeric identifier of first band and the color-numeric identifier of a second band.

23. The method according to claim 22, further comprising:

illuminating the same portion of the surface of the object with a pattern of electromagnetic radiation comprising discrete targets; and

detecting the discrete targets.

24. The method according to claim 23, wherein the discrete targets comprise white light.

25. The method according to claim 23, wherein the discrete targets are generally round dots.

26. The method according to claim 23, further comprising correlating the discrete targets with the overall final region values to produce correlated region values.

27. The method according to claim 26, wherein correlating the discrete targets with the overall final region values is carried out by a computer program.

28. The method according to claim 26, wherein correlating the discrete targets with the final region values comprises triangulating the correlated region values to generate a three-dimensional model of a surface of the object.

29. The method according to claim 1, further comprising illuminating at least a portion of a surface of the object with electromagnetic radiation comprising a plurality of thin first bands of differentiated wavelength to form a thin first bands projection, the thin first bands having an orientation that is substantially the same as the orientation of the first bands, and at least one of the thin first bands has a width that is less than the width of at least one of the first bands;

detecting the thin first bands projection including the thin first bands of differentiated wavelength;

illuminating at least a portion of the surface of the object with electromagnetic radiation comprising a plurality of thin second bands of differentiated wavelength to form a thin second bands projection, the thin second bands having an orientation that is substantially the same as the orientation of the second bands, and at least one of the thin second bands has a width that is less than the width of at least one of the second bands; and

detecting the thin second bands projection including the thin second bands of differentiated wavelength.

30. The method according to claim 1, wherein said object comprises an aircraft component.

31. The method according to claim 1, wherein said object comprises a watercraft component.

32. The method according to claim 1, wherein said object comprises an automotive component.

33. A method for determining the shape of a three-dimensional object, the method comprising:

illuminating at least a portion of a surface of the object with electromagnetic radiation comprising a plurality of wide bands of differentiated characteristics to form a wide bands projection;

detecting the wide bands projection including the wide bands of differentiated characteristics;

illuminating the same portion of the surface of the object with electromagnetic radiation comprising a plurality of thin bands of differentiated characteristics to form a thin bands projection, wherein the thin bands have an orientation that is substantially the same as the orientation of the wide bands, and at least one of the thin bands has a width that is less than the width of at least one of the wide bands;

detecting the thin bands projection including the thin bands of differentiated characteristics; and

determining the shape of the object from the detected wide bands projection and the detected thin bands projection.

34. The method of claim 33, wherein the differentiated characteristics of the first bands comprise differentiated wavelengths, and the differentiated characteristics of the second bands comprise differentiated wavelengths.

35. The method according to claim 33, wherein each of the wide bands have a uniform appearance.

36. The method according to claim 33, wherein each of the wide bands are located immediately adjacent one another.

37. The method according to claim 33, wherein each of the wide bands are generally parallel to one another.

38. The method according to claim 33, wherein each of the thin bands have a uniform appearance.

39. The method according to claim 33, wherein each of the thin bands are generally parallel to one another.

40. The method according to claim 33, wherein each of the thin bands are located immediately adjacent one another.

41. The method according to claim 33, wherein the thin bands projection can be superimposed on the wide bands projection.

42. The method according to claim 33, further comprising illuminating the same portion of a surface of the object with electromagnetic radiation comprising a plurality of additional wide bands of differentiated wavelength to form an additional wide band projection, wherein each of the additional wide bands has an orientation that is different from the orientation of the original wide bands;

detecting the additional wide band projection including the additional wide bands of differentiated wavelength;

illuminating the same portion of the surface of the object with electromagnetic radiation comprising a plurality of additional thin bands of differentiated wavelength to form an additional thin band projection, wherein the thin bands have an orientation that is generally the same as the orientation of the additional wide bands, and at least one additional thin band has a width that is less than the width of at least one additional wide bands; and

detecting the additional thin band projection including the additional thin bands of differentiated wavelength.

43. The method according to claim 42, wherein the orientation of the plurality of wide bands is about perpendicular to the orientation of the plurality of additional wide bands.

44. The method according to claim 42, wherein one of the plurality of wide bands and the plurality of additional wide bands are oriented in a substantially vertical direction and the other of the plurality of wide bands and the plurality of additional wide bands are oriented in a substantially horizontal direction.

45. The method according to claim 42, wherein the number of wide bands equals the number of additional wide bands.

46. The method according to claim 42, wherein the plurality of wide bands comprises at least three wide bands.

47. The method according to claim 42, wherein the plurality of wide bands comprises from 6 to 12 wide bands.

48. The method according to claim 42, wherein each of the wide bands comprise a different color of light.

49. The method according to claim 42, wherein each of the plurality of additional wide bands comprise a different color of light.

50. The method according to claim 42, further comprising assigning a color-numeric value to each of the wide bands, thin bands, additional wide bands and additional thin bands.

51. The method according to claim 50, further comprising generating a first final region value from each of the color-numeric values for the wide bands and each of the color-numeric values for the thin bands, and generating a second final region value from each of the color-numeric values for the additional wide bands and each of the color-numeric values for the additional thin bands.

52. The method according to claim 51, further comprising generating an overall final region value from each of the first final region values and each of the second final region values.

53. The method according to claim 52, further comprising illuminating the same portion of the surface of the object with a pattern of electromagnetic radiation comprising discrete targets; and

detecting the discrete targets.

54. The method according to claim 53, wherein the electromagnetic radiation of the discrete targets comprises generally white visible light.

55. The method according to claim 53, further comprising correlating the discrete targets with the overall final region values to produce correlated region values.

56. The method according to claim 55, wherein said correlating the discrete targets with the final region values is carried out by a computer program.

57. The method according to claim 55, wherein correlating the discrete targets with the final region values further comprises triangulating the correlated region values to generate a three-dimensional model of the surface portion of the object.

58. The method according to claim 33, wherein said object comprises an aircraft component.

59. The method according to claim 33, wherein said object comprises a watercraft component.

60. The method according to claim 33, wherein said object comprises an automotive component.

61. A method for determining the shape of a three-dimensional object, the method comprising:

illuminating at least a portion of a surface of the object with electromagnetic radiation comprising a plurality of bands of differentiated characteristics, wherein each band has a substantially uniform appearance to form a projection;

detecting the projection including the bands of differentiated characteristics; and

determining the shape of the object from the detected projection.

62. The method of claim 61, wherein the differentiated characteristics of the first bands comprise differentiated wavelengths, and the differentiated characteristics of the second bands comprise differentiated wavelengths.

63. The method according to claim 61, wherein each of the plurality of bands are located immediately adjacent one another.

64. The method according to claim 61, wherein each of the plurality of bands are generally parallel to one another.

65. An apparatus for determining the shape of a three-dimensional object, comprising:

illuminating means for illuminating at least a portion of a surface of the object with electromagnetic radiation comprising a plurality of first bands of differentiated characteristics to form a first bands projection;

detecting means for detecting the first bands projection including the first bands of differentiated characteristics;

second illuminating means for illuminating at least a portion of the surface of the object with electromagnetic radiation comprising a plurality of second bands of differentiated characteristics to form a second bands projection, the second bands having a different orientation than the first bands;

second detecting means for detecting the second bands projection including the second bands of differentiated characteristics; and

shape determining means for determining the shape of the object from the detected first bands projection and the detected second bands projection.

66. An apparatus for determining the shape of a three-dimensional object, comprising:

illuminating means for illuminating at least a portion of a surface of the object with electromagnetic radiation comprising a plurality of wide bands of differentiated characteristics to form a wide bands projection;

detecting means for detecting the wide bands projection including the wide bands of differentiated characteristics;

second illuminating means for illuminating the same portion of the surface of the object with electromagnetic radiation comprising a plurality of thin bands of differentiated characteristics to form a thin bands projection, wherein the thin bands have an orientation that is

substantially the same as the orientation of the wide bands, and at least one of the thin bands has a width that is less than the width of at least one of the wide bands;

second detecting means for detecting the thin bands projection including the thin bands of differentiated characteristics; and

shape determining means for determining the shape of the object from the detected wide bands projection and the detected thin bands projection.

67. An apparatus for determining the shape of a three-dimensional object, comprising:

illuminating means for illuminating at least a portion of a surface of the object with electromagnetic radiation comprising a plurality of bands of differentiated characteristics, wherein each band has a substantially uniform appearance to form a projection;

detecting means detecting the projection including the bands of differentiated characteristics; and

shape determining means for determining the shape of the object from the projection.

68. An object having a shape determined by the method of claim 1.

69. An object having a shape determined by the method of claim 33.

70. An object having a shape determined by the method of claim 61.